

WHAT IS CLAIMED IS:

1. A process for assigning frequency channels to communications in a cellular wireless system, comprising:
 - performing a simulation of the system to produce a plurality of lists of channel rankings, the simulation evolving the lists according to an algorithm that dynamically reduces inter-communication interference, ones of the lists of channel rankings prioritizing the channels to service communications by associated ones of the base stations; and
 - assigning the lists of produced channel rankings to associated base stations that are configured to assign channels to service communications with mobile units based on the channel ranking in the associated assigned ones of the lists.
2. The process of claim 1, wherein the evolving is constrained to produce less than a preselected amount of call blocking and/or call dropping.
3. The process of claim 1, wherein one of the produced lists of channel rankings separately ranks the channels for separate angular sectors of the associated base station.
4. The process of claim 3, wherein the performing includes producing a list that serially ranks the channels for usage in servicing wireless communications.
5. The process of claim 4, wherein the performing comprises:
 - identifying the produced lists of channel rankings in response to determining that the performing is converging to a fixed point for evolution of the lists of channel rankings.
6. The process of claim 5, wherein the performing comprises:
 - determining quantities that characterize communications serviced by one of the angular sectors, individual ones of the quantities being indicative of potential inter-call interference for calls serviced by associated ones of the frequency channels; and

re-ranking the list of frequency channels associated with the one of the angular sectors based on the determined quantities.

7. The process of claim 5, wherein the performing comprises:
5 providing a fading matrix for the system; and
wherein the performing includes assigning new calls to base stations based in part on the fading matrix.

8. The process of claim 5, further comprising:
10 providing input data on locations of base stations and distributions of mobile units; and
wherein the performing is based in part on the provided input data.

9. The process of claim 5, wherein the performing includes simulating
15 redialing of blocked calls.

10. The process of claim 5, wherein the performing includes simulating maintenance processing of calls based on associated power levels.

20 11. The process of claim 5, wherein the performing includes assigning new calls according to a time division-multiplexing scheme.

25 12. The process of claim 5, further comprising:
servicing new calls in the base stations based on priorities derived from the assigned lists of channel rankings.

13. The process of claim 5, wherein the algorithm lowers interference based solely on uplink communications.

30 14. The process of claim 5, wherein the algorithm lowers interference based solely on downlink communications.

15. A program storage device encoding a computer executable program of instructions to rank frequency channels of a cellular wireless system, the instructions to cause the computer to:

5 perform a simulation of the system to produce a plurality of lists of channel rankings, the simulation evolving the lists according to an algorithm that dynamically reduces inter-communication interference, ones of the lists of channel rankings prioritize the channels to service communications by associated ones of the base stations; and
10 assign the lists of produced channel rankings to the base stations for use in assigning channels to service communications with mobile units.

16. The device of claim 15, wherein the simulation evolves the lists without producing more than a preselected amount of call blocking and/or call dropping.

15 17. The device of claim 15, wherein one of the produced lists of channel rankings separately ranks the channels for separate angular sectors of the associated base station.

20 18. The device of claim 17, wherein the instruction to perform produces a list that serially ranks the channels for usage in servicing wireless communications.

25 19. The device of claim 18, wherein the instruction to perform causes the computer to identify the produced lists of channel rankings in response to determining that the performing a simulation is converging to a fixed point for evolution of the lists of channel rankings.

20. The device of claim 19, wherein the instruction to perform further causes the computer to:

30 determine quantities that characterize communications serviced by one of the angular sectors, individual ones of the quantities being indicative of potential inter-call interference for calls serviced by associated ones of the frequency channels; and

re-rank the list of frequency channels associated with the one of the angular sectors based on the determined quantities.

21. The device of claim 19, wherein the instruction to perform causes
5 simulated redialing of blocked calls.

22. The device of claim 19, wherein the instruction to perform causes simulated maintenance processing of calls based on associated power levels.

10 23. The device of claim 19, wherein the instruction to perform causes processing of simulated calls according to a time division-multiplexing scheme.

24. A channel allocation system for ranking frequency channels for usage by base stations of a cellular wireless system, comprising:

15 a processor configured to dynamically simulate the cellular wireless system according to an algorithm that dynamically produces lists of frequency channel rankings for individual base stations in a manner that reduces inter-call interference.

25. The allocation system of claim 24, further comprising:

20 a link coupling the processor to the base stations, the link supporting transmissions of input data on the cellular wireless system to the processor and transmissions of the produced lists of channel rankings to the base stations, the processor configured to use the input data to determine a starting state for the dynamical simulation.

25 26. The allocation system of claim 24, wherein the processor is configured to produce separate lists that rank the frequency channels for use in separate angular sectors of at least one of the base stations in assigning channels to support communications.

27. The allocation system of claim 26, further comprising:

30 a plurality of base stations, each base station having a data storage device configured to store ones of the produced lists received from the processor.

28. The allocation system of claim 26, wherein the processor is configured to perform the dynamical simulation based on an event queue containing events for simulating processing of communications with mobile units.

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29. A process for assigning frequency channels to communications in a cellular wireless system, comprising:

10 performing an iterative algorithm to produce a plurality of lists of channel rankings, the algorithm evolving the lists according to reduce inter-communication interference, ones of the lists of channel rankings prioritizing the channels to service communications by associated ones of the base stations; and

15 assigning the lists of produced channel rankings to associated ones of the base stations, the base stations being configured to assign channels to service communications with mobile units based on the rankings in the associated ones of the lists.

15 30. The process of claim 29, wherein the algorithm is constrained to produce less than a preselected amount of communication blocking and/or dropping.

20 31. The process of claim 29, wherein one of the produced lists of channel rankings separately ranks the channels for separate angular sectors of the associated base station.

25 32. The process of claim 31, wherein the performing includes producing a list that serially ranks the channels for usage in servicing wireless communications.

33. The process of claim 31, wherein the performing comprises:

identifying the produced lists of channel rankings in response to determining that the performing is converging to a fixed point for evolution of the lists of channel rankings.

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